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ABSTRACT

This report describes a multi-organizational project to accomplish two goals: (1) to develop pharmacology/pharmacotherapeutics curriculum guidelines designed to prepare family nurse practitioners (FNPs) for full prescriptive authority; and (2) to develop regulatory criteria for evaluating the academic preparation and clinical competencies of FNPs applying for prescriptive authority. Section 1 provides background information on the project and profiles the project's 11-member advisory committee, which includes experts from nursing education, practice, and regulatory arenas. Section 2 outlines the process of development of the model pharmacology/pharmacotherapeutics curriculum guidelines. Section 3 is an overview of the current regulatory environment and development of the regulatory evaluation criteria that details legal recognition of FNPs in individual states and territories. Section 4 recaps the guidelines' objectives, development, and planned dissemination. The following materials are included in the report's eight appendixes: (1) lists of project staff, National Council of State Boards of Nursing advisory committee members, other contributors, and National Organization of Nurse Practitioner Faculties expert panel members; (2) model pharmacology/pharmacotherapeutics curriculum guidelines; (3) recommended regulatory criteria for evaluating family nurse practitioners desiring prescriptive authority; (4) examples of substances in schedules I-V; and (5) a list of organizations, groups, and individuals who provided comments on draft documents. (Contains 12 references.) (MN)

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Curriculum Guidelines & Regulatory Criteria for Family Nurse Practitioners Seeking Prescriptive Authority to Manage Pharmacotherapeutics in Primary Care

Summary Report 1998

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Curriculum Guidelines & Regulatory Criteria for Family Nurse Practitioners Seeking Prescriptive Authority to Manage Pharmacotherapeutics in Primary Care

Summary Report
1998

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

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Dear Colleague:

The Health Resources and Services Administration (HRSA) and Agency for Health Care Policy and Research (AHCPR) are pleased to present "Curriculum Guidelines and Regulatory Criteria for Family Nurse Practitioners Seeking Prescriptive Authority to Manage Pharmacotherapeutics in Primary Care." This contract, supported by the HRSA, Division of Nursing and the AHCPR, Center for Primary Care Research, provided resources for the National Council of State Boards of Nursing (NCSBN) and the National Organization of Nurse Practitioner Faculties (NONPF) to work with a wide array of experts in developing these guidelines and proposed regulatory criteria.

In Fiscal Year 1993, the Senate Appropriations Committee report (102-397) urged AHCPR to work collaboratively with HRSA's Division of Nursing to develop an advanced practice curriculum and guidelines to prepare nurse practitioners for prescription privileges. In response, AHCPR and HRSA jointly designed a two-part approach to the development of a model curriculum. The first objective was to collect and analyze existing pharmacology curricula in federally funded Family Nurse Practitioner (FNP) programs. The results of the analysis of existing FNP curricula are reported in "Analysis of Family Nurse Practitioner Pharmacology Curricula", September 30, 1994, available from HRSA's Division of Nursing. The second was to develop the curriculum guidelines and regulatory criteria that are reported in the attached document. FNPs were selected as the target group for this project because they have a broad scope of practice. Thus, it was felt that the curricula to teach prescribing practices to FNPs would be more applicable and adaptable to other advanced practice nursing categories. This document reports the work accomplished in the second phase.

The AHCPR was established in December 1989 under Public Law 101-239 (Omnibus Budget Reconciliation Act of 1989). AHCPR is the lead agency within the U.S. Department of Health and Human Services charged with supporting research to improve the quality of health care, reduce its cost, and broaden access to essential services. AHCPR's broad program of research and data development brings practical, science-based information to health care providers, consumers, and other health care purchasers.

The HRSA assures access to quality health care services for poor, uninsured, and underserved individuals and families. HRSA is focused on **primary care** (including community and migrant health centers, health care programs for the homeless, and programs for residents of public housing), **HIV/AIDS services** (administering the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act), **maternal and child health** (including the block grant to States and Healthy Start, which combats infant mortality in communities with excessively high rates), and **health professions** development (particularly programs to increase the diversity and improve the distribution of the primary health care workforce).

HRSA's Division of Nursing is the key Federal focus for national nursing workforce development. Now in its 51st year, the Division of Nursing provides national leadership to assure a nursing workforce capable of meeting the health care needs of the public.

AHCPR and HRSA's Division of Nursing were pleased to work together on the "Model Pharmacology/ Pharmacotherapeutics Curriculum Guidelines" and the "Regulatory Criteria for Evaluating Family Nurse Practitioners Desiring Prescriptive Authority." The distinguished panel of experts and advisory committee, convened by the National Council of State Boards of Nursing in collaboration with the National Organization of Nurse Practitioner Faculties, provided valuable expertise and guidance throughout the process. We hope that dissemination of these guidelines and criteria will help FNP programs and States improve the quality and accessibility of primary health care, and improve and expand nursing services to high-risk and underserved populations.

The two agencies are presenting this summary report in the hope that the suggested educational program guidelines and model regulatory criteria can augment the contributions of nurse practitioners in meeting the nation's health care needs.

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I. Introduction

The project described in this report was funded by the Center for Primary Care Research, Agency for Health Care Policy and Research (AHCPR), U.S. Department of Health and Human Services and the Division of Nursing (DN), Bureau of Health Professions, Health Resources and Services Administration, U.S. Department of Health and Human Services. The project was performed under a contract awarded to the National Council of State Boards of Nursing, Inc.

The project had two distinct components: the development of pharmacology/pharmacotherapeutics curriculum guidelines designed to prepare family nurse practitioners (FNPs) for full prescriptive authority and the development of regulatory criteria for evaluating the academic preparation and clinical competencies of FNPs applying for prescriptive authority. A key factor in the development of these documents was the building of consensus among representatives of a wide group of stakeholders. It is anticipated that this approach will promote the acceptance and use of the curriculum guidelines and the evaluation criteria by education and regulatory communities.

When this project was initiated in October 1995, nurse practitioners (NPs) were legally allowed an advanced scope of practice in all but five states and territories (American Samoa, Illinois, Northern Marianas, Ohio, Puerto Rico)[1]. However, the scope of prescriptive authority varied greatly from state to state with regard to degree of autonomy (i.e., none to complete) and the types of medications that could be prescribed (e.g., legend only, Schedule II narcotics, etc.), (National Council of State Boards of Nursing (NCSBN), 1995a, 1995b, 1997).

The development and adoption of uniform curriculum guidelines for pharmacology and pharmacotherapeutics content and of criteria for granting prescriptive authority to FNPs would promote the delivery of safe, effective pharmacotherapeutic treatment of clients and would protect the public by establishing uniform standards to be met by all FNPs. Standardized curriculum guidelines and criteria would also assist faculty in graduate or continuing education programs in developing pharmacological curricula that would ensure that FNP students become competent to prescribe medications knowledgeably and safely, and to manage pharmacotherapeutics in their clinical practice. Furthermore, uniform regulatory criteria would promote consistency in evaluating the preparation and competence of individual FNPs who apply for prescriptive privileges within a state. They would also facilitate interstate mobility, thus removing a practice barrier affecting access to care.

Since FNPs have the broadest scope of practice of all advanced practice registered nurses (APRNs) (Marion & Williamson, 1985), the development of curriculum guidelines and regulatory criteria for evaluation for this group could serve as a foundation for developing similar guidelines for APRNs in the fields of pediatrics, adult, gerontologic, and women's health care who practice primarily in primary health care delivery settings.

[1] **By July 1996, this number was reduced to four following legislative action in Ohio, which resulted in the legal recognition of nurse practitioners.**

Background

In fiscal year 1993, the U.S. Senate Committee on Appropriations included in its report on legislation related to the activities of the AHCPR its wish that the Agency, together with the DN, undertake the development of advanced practice nursing curriculum and guidelines to prepare nurses for the responsibility of writing prescriptions.

The development both of criteria for evaluating FNPs applying for prescriptive authority and of pharmacology/pharmacotherapeutics-related curriculum guidelines would fill a current void in these areas. While the National Council of State Boards of Nursing's *Model Nursing Practice Act* (1994b) specifies "successful completion of a graduate degree with a major in nursing or a graduate degree with a concentration in the advanced nursing practice category" (p.19), the language included in the *Model Nursing Administrative Rules* (1994a) does not provide detailed guidelines for evaluating the pharmacological content of the curriculum or the specific competencies required for prescriptive authority. However, the American Association of Colleges of Nursing's document, *The Essentials of Master's Education for Advanced Practice Nursing* (1995), outlines essential core content for all master's education for nursing and essential core content for all advanced practice nurses in direct care roles. The document includes the following statement (p.12): "...in order to ensure sufficient depth and focus, separate core courses should be developed for each of the three content areas defined as advanced practice nursing core: advanced health/physical assessment, advanced physiology/pathophysiology, and advanced pharmacology." Likewise, while the National Organization of Nurse Practitioner Faculties' (NONPF) document, *Advanced Nursing Practice: Curriculum Guidelines and Program Standards for Nurse Practitioner Education* (1995) identifies the need to include pharmacological science in the curriculum and includes a list of relevant course objectives and competencies to be achieved, it does not provide in-depth information such as would be found in course outlines.

The current regulatory environment can best be characterized as "unstandardized" with regard to the scope of prescriptive authority granted to FNPs and the criteria/requirements that must be met to obtain this authorization. Although boards of nursing are the predominant regulators of FNP practice, boards of medicine and/or pharmacy are directly or indirectly involved in at least eight jurisdictions (NCSBN, 1995a, 1995b, 1997). In addition to variations in requirements for obtaining prescriptive authority from one jurisdiction to another, a further barrier to full autonomous practice is the disparity in the scope of prescriptive authority permitted. This diversity is well documented by the National Council of State Boards of Nursing (1995a, 1995b, 1997) drawing on annual surveys of its membership, the National Association of Boards of Pharmacy (1994), and the Washington Consulting Group (1994).

Developing curriculum guidelines takes on added significance when the changes currently occurring in this country's health care delivery systems are considered. These changes are occurring in response to concerns about the cost of health care delivery, access to health care, and the availability of primary health care providers, and have led to an increased demand for NPs. Data compiled in 1995 by the National League for Nursing (NLN) (P. Moccia, personal communication) indicated that, at that time, there were 164 colleges and universities offering educational programs leading to a master's degree in nursing; an additional 25 programs were planned and expected to be operational within three years. The American Association of Colleges of Nursing (1997) reports that of 241 nursing education programs offering master's level nurse practitioner programs, 196 (81%) had a FNP specialty component/track. A 1996 report by NONPF states that there were 527 NP clinical tracks at 202 institutions, leading to a master's degree or a certificate. Of the 527 tracks, 141 were for the preparation of FNPs.

The need for commonly agreed-upon evaluation criteria for FNPs applying for prescriptive authority and for curriculum guidelines in the areas of pharmacology and pharmacotherapeutics is critical given current trends toward greater utilization of FNPs and other types of NPs for primary health care (e.g., health promotion, disease prevention, and treatment) in community-based delivery systems. In order to fully maximize their potential for providing competent primary health care for all types of clients, including those in underserved populations, FNPs must possess sufficient knowledge of pharmacology, pharmacotherapeutics, other related sciences, and relevant state and federal laws. In addition to promoting interstate mobility of FNPs, consistency in regulatory agencies' evaluation criteria and requirements also can enhance health care provider groups' and the public's understanding and acceptance of the value FNPs can add to the delivery of quality health care.

Advisory Committee

Shortly after this project began in October 1995, the contractor appointed eleven individuals to an Advisory Committee, following approval by the AHCPR's and the HRSA's DN project officers. Nominees were solicited from numerous organizations representing nursing, medicine and pharmacy. The eleven appointed individuals represented nursing and pharmacy (see Appendix B). The physician nominees were not available to serve on the Advisory Committee. Subsequently, a family physician in practice in a rural health care setting who had worked with NPs, as a member of the Uniformed Health Services Corps of the U.S. Public Health Service, was recruited as a consultant. He agreed to review the proposed curriculum guidelines and regulatory evaluation criteria and provide written comments.

The collective knowledge and advice of this multi-disciplinary Advisory Committee contributed significantly to the consensus building activities plan to be implemented for the project. The consensus building activities were considered essential to wide acceptance within the health professions and the regulatory communities, and are expected to assist in the adoption of the project's guidelines and regulatory criteria.

This project is an excellent example of how the development of a high degree of cooperation and collegiality between experts from nursing education, practice, and regulatory arenas can promote the achievement of a highly desirable goal. It is anticipated that the outcomes will be instrumental in promoting the adoption of uniform curriculum guidelines by nursing education programs and use of the evaluation criteria by state-level regulatory boards to determine FNP eligibility for prescriptive authority. Such actions also would promote the delivery of safe, effective pharmacotherapeutic treatment of clients and would protect the public. Both the curriculum guidelines and the regulatory evaluation criteria can easily be adapted to address other types of NPs.

II. Development of the Model Pharmacology/Pharmacotherapeutics Curriculum Guidelines

Responsibility for developing Model Pharmacology/Pharmacotherapeutics Curriculum Guidelines was subcontracted by the National Council to the National Organization of Nurse Practitioner Faculties (NONPF). As a first step existing resources addressing pharmacology and pharmacotherapeutics curricula in NP programs were sought. The search yielded few articles, one of which detailed the pharmacology curriculum for Physician Assistant education (Wilson et al., 1995). A key resource on NP pharmacology curricula was the *Analysis of Family Nurse Practitioner Pharmacology Curricula* (Hernandez, 1994) commissioned by the AHCPR and the DN. Other resources reviewed included selected NP pharmacology curricula and documents published by the American Association of Colleges of Nursing (1995), Fullerton and Pickwell (1993), NONPF (1995) and Waigandt and Chang (1989). This review demonstrated great variation in the curricular content, faculty qualifications, and expected student outcomes/competencies among FNP programs. However, these resources were valuable for identifying essential elements to be included in model pharmacology/pharmacotherapeutics curriculum guidelines.

Expert Panel

In order to successfully address the issues surrounding FNP's prescriptive authority and pharmacotherapeutics management, an Expert Panel was appointed by NONPF project staff. The Expert Panel represented FNP education and clinical practice, medicine, pharmacy, and ethical/legal perspectives. The eight members were selected from nominees submitted by various NP organizations and other stakeholder groups. The members of the Expert Panel are listed in Appendix D.

Preparation of the First Draft

Prior to the Expert Panel's first meeting in December 1995, members reviewed the above-listed resource materials. Using their expert knowledge and experience and the available resources, the Expert Panel accomplished the following tasks: agreement on the outline of topics that would appear in the curriculum guidelines and the identification of competencies to be achieved by the end of the course and by the end of the FNP program. Consensus was also reached regarding faculty preparation requirements, prerequisites, and sequencing for an advanced-level Pharmacology/Pharmacotherapeutics course.

Responsibility for developing the content outline, teaching methods, and evaluation techniques was divided among the panel members. These small groups submitted reports to the NONPF office at the end of January 1996. During this time, project staff monitored the progress of the small groups, and provided administrative assistance as needed. All materials received from the small groups were compiled by the NONPF project director into a rough draft of the curriculum guidelines. This draft was sent to Expert Panel members for critique and was returned with comments and suggested changes. All substantive recommendations and revisions from Expert Panel members were collated and integrated into the first draft of the curriculum guidelines document. Then in March 1996, this draft was circulated among a wide range of stakeholder groups representing nursing, medicine, pharmacology, and consumers. In addition, presentations about the project were given at eight national meetings of NP groups.

Document Review and Revision Process

One of the purposes of the wide dissemination of the curriculum guidelines was to expose the document to as extensive a review as possible. Therefore, they were made available at each presentation to nursing stakeholder groups. Participants were encouraged to take several copies, not only for themselves, but to distribute to their colleagues for review and comment. Information about how to obtain copies of all project

materials (i.e., curriculum guidelines and the regulatory evaluation criteria) were widely circulated. Comments on the curriculum guidelines could be returned to the project staff by mail, telephone, or e-mail. Over 100 comments and suggestions were received as a result of disseminating the first draft. These comments and suggestions addressed the need for a model curriculum, faculty preparation, course pre-requisites and sequencing, and the content outline. These comments were collated, summarized and organized under the major topic headings, and made available to the Expert Panel in preparation for its second meeting.

After reviewing these comments, the Expert Panel met in July 1996 to discuss and prepare a second draft. The resulting document was less cumbersome and technical, and provided a more generalized approach to outlining the pharmacology/pharmacotherapeutics curriculum content. In addition, the Expert Panel identified a list of assumptions upon which the curriculum guidelines were based. Definitions of terms used throughout the document were included in the introduction.

The second draft was distributed in early August 1996 to all stakeholder groups, Advisory Committee members, and other individuals, groups and organizations who had commented on the first draft. It was also distributed at presentations made by the project directors at national meetings and continued to be available upon request. Less than 40 comments and responses were received as a result of circulating the second draft. Thus, the diversity of opinions generated by the first draft had narrowed significantly.

In September 1996, the Advisory Committee met a second time. Its tasks included a thorough review of the second draft of the curriculum guidelines and the comments that had been received. In addition, the Advisory Committee reviewed a series of recommended changes to specific sections of the document that were prepared by the NONPF project director. Following the receipt of feedback from Advisory Committee members and the Expert Panel, a third and final version of the curriculum guidelines was prepared. The final document was sent to members of the Expert Panel, the Advisory Committee, all boards of nursing and the AHCPR and DN project officers for editorial review prior to finalization. The text of the *Model Pharmacology and Pharmacotherapeutics Curriculum Guidelines* is provided in Appendix E.

III. Overview of the Current Regulatory Environment and Development of the Regulatory Evaluation Criteria

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Prior to developing regulatory criteria for evaluating FNPs applying for prescriptive authority, documentation of currently used regulatory processes and relevant laws and regulations was collected and reviewed to identify the current state of affairs. Facilitators, barriers and challenges affecting the evaluation process and the granting of prescriptive authority were identified and analyzed. Resource documents received from the boards were varied, and included, but were not limited to: application forms and instruction sheets, evaluation forms/checklists used to evaluate FNP applicants, forms for verification of successful completion of academic programs, administrative rules, prescriptive authority rules and regulations, proposed and actual legislative bills related to FNP prescriptive authority, copies of laws regulating the practice of nursing, requirements for prescribing and dispensing privileges, certification requirements, and copies of state nursing practice acts.

While an extensive review of nursing, medicine and pharmacy literature revealed significant information related to the scope of NP practice and prescriptive authority, current information on barriers and to facilitators of gaining prescriptive authority was scarce. However, the following documents contained relevant information: The National Council's (1995b) *Regulation of Advanced Practice Registered Nurses by the National Council's Member Boards*, the National Association of Boards of Pharmacy's (1994) *Survey of Pharmacy Law - 1994-95*, and the Washington Consulting Group's (1994) *Survey of Certified Nurse Practitioners and Clinical Nurse Specialists*. Relevant and current information was also found in the *Annual Update of How Each State Stands on Legislative Issues Affecting Advanced Nursing Practice* (Pearson, 1995) and the *Characteristics of Practice Environments for Nurse Practitioners and for Physician Assistants* (Jones, Spock, & Mullinix, 1995).

Current Requirements and Procedures for Obtaining Prescriptive Authority

Of the 51 boards regulating NPs[2], 42 grant some level of prescriptive authority to FNPs (see Table 1). Information about these 42 boards formed the basis for an analysis of the requirements an FNP must meet and the processes used to evaluate applications for prescriptive authority.

[2] **Boards of nursing either enumerate the specific types of NPs regulated based on area of specialization (e.g., family, pediatric, etc.) or group them together into one category. Regardless of how NPs are categorized, the basic criteria for legal recognition and the granting of prescriptive authority do not vary by type of NP.**

Table 1. Legal recognition of (family)[3] nurse practitioners and the granting of prescriptive authority.

No legal recognition (n=5)	Legal recognition; No prescriptive authority (n=9)	Legal recognition; Automatic prescriptive authority granted (n=18)	Legal recognition; Separate application for prescriptive authority (n=24)
American Samoa	Alabama	Arizona	Alaska
Illinois	Colorado[5]	Florida	Arkansas
Commonwealth of The Northern Marianas	Georgia	Hawaii	California
Ohio[4]	Guam	Idaho	Connecticut
Puerto Rico	Louisiana	Iowa	Delaware
	Michigan	Kansas	District of Columbia
	Oklahoma	Kentucky	Indiana
	Pennsylvania	Mississippi	Maine
	Virgin Islands	Missouri	Maryland
		Nebraska	Massachusetts
		New Hampshire	Minnesota
		New Jersey	Montana
		New Mexico	Nevada
		New York	North Dakota
		North Carolina	Oregon
		South Dakota	Rhode Island
		Utah	South Carolina
		Vermont	Tennessee
			Texas
			Virginia
			Washington
			West Virginia
			Wisconsin
			Wyoming

[3] See Footnote #2

[4] NPs were legally recognized in Ohio in 1996; however, no prescriptive authority was granted.

[5] Prescriptive authority granted after data collection and analysis was completed. NPs in Colorado must complete a separate application form, may function independently, and may prescribe Schedule II-V controlled substances (personal communication, Colorado Board of Nursing).

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Criteria Used for Evaluation of NP Applicants Seeking Prescriptive Authority

An analysis of current regulations governing the granting of authority to practice as an NP and the granting of prescriptive authority resulted in the identification of six commonly used criteria. These criteria are as follows:

- Evidence of educational preparation
- Evidence of successful completion of a separate pharmacology course
- Evidence of successful completion of a preceptorship
- Evidence of national certification
- Evidence of previous NP experience
- Evidence of physician collaboration

The first criterion identified was *education*. Information sought by the 42 boards granting prescriptive authority was varied and included: basic nursing education; detailed information related to courses in the advanced nursing education program; NP education; and continuing education (see Table 2). Ten boards (24%) specifically stated that an MSN is required. Evidence of successful completion of a *separate pharmacology course* was the second criterion identified. Twenty-one of the 42 boards (50%) specifically requested this information.

The third criterion identified was evidence of successful *completion of a preceptorship*. Board requests for documented evidence included: number of hours the applicant spent in the preceptorship, the setting (whether rural, inner-city, or urban); the name of the preceptor; address of the site; and telephone number of the site. Twenty-two of the 42 boards (52%) requested this information. *National certification* was the fourth criterion identified. Information sought included: the certifying organization; when the current certification expired; and the area of specialization. Thirty-eight of the 42 boards (90%) required this information.

Information related to *previous NP experience* was the fifth criterion and included questions such as the number of practice hours, employer, dates of employment, location, and scope of practice. Twenty-four of the 42 boards (57%) requested this information. Criterion six was evidence of *physician collaboration*. Evidence of collaboration sought by boards included: number of hours the physician worked directly with the NP; plans for MD coverage when the collaborating physician was unavailable; and address and phone number of the collaborating physician. Thirty-one of the 42 boards (74%) requested this information.

Additional Findings

Additional findings included: variations in levels of prescriptive authority granted; schedules of controlled substances that can be prescribed; and facilitators, challenges, and barriers to FNPs gaining prescriptive authority.

Levels, Processes, and Restrictions.

Of the 42 states granting prescriptive authority, 18 (43%) grant "automatic" prescriptive authority when an FNP is authorized to practice in the state. The other 24 states (57%) require completion of a separate application to determine if prescriptive authority should be granted (see Table 1). Specific information related to restrictions to full prescriptive authority is given in Table 3.

Table 2. Documentation required in applications for legal recognition as a nurse practitioner and for requesting prescriptive authority.

Criterion	States Requiring Documentation
Documentation of basic nursing education (n=17)	Arizona, ***Arkansas***[6], ***Connecticut, Delaware***, Florida, Idaho, Kentucky, ***Maryland, Massachusetts***, Mississippi, ***Nevada***, New Jersey, New York, ***North Dakota***, South Dakota, Vermont, ***West Virginia***
Description of advanced nursing education (n=22)	Arizona, ***Arkansas, Connecticut, Delaware,*** Florida, Idaho, Iowa, Kentucky, Mississippi, Missouri, ***Montana***, Nebraska, ***Nevada***, New Jersey, New York, ***North Dakota, Oregon***, South Dakota, ***Tennessee, Texas, Washington, Wisconsin***
Master's degree requirement stated (n-10)	***Alaska, Connecticut***, Hawaii, ***Montana***, Nebraska, New Jersey, ***North Dakota, Oregon***, Utah, ***Washington***
Detailed description of NP education (n=27)	***Alaska, Arkansas, California, Connecticut***, Florida, Idaho, Iowa, Kansas, Kentucky, ***Maine, Maryland, Massachusetts***, Mississippi, Nebraska, New Hampshire, New Mexico, New York, North Carolina, ***North Dakota, Oregon, South Carolina***, South Dakota, ***Texas***, Utah, Vermont, ***Virginia, Washington***
Description of continuing education coursework (n=10)	***Alaska***, Arizona, ***California, Montana***, New Hampshire, New Mexico, ***North Dakota, South Carolina, Washington, Wisconsin***
Evidence of a separate pharmacology course (n=21)	***Alaska, Arkansas, California, Connecticut***, Florida, Idaho, ***Indiana***, Kansas, ***Maryland***, New Hampshire, New Jersey, New Mexico, New York, North Carolina, ***North Dakota, Oregon, South Carolina, Tennessee, Texas, Washington, Wisconsin***
Evidence of preceptorship completion (n=22)	***Alaska, Arkansas, California, Connecticut***, Florida, Kansas, Idaho, Kentucky, ***Maryland***, Mississippi, ***Montana***, Nebraska, ***Nevada***, New Hampshire, New Mexico, New York, North Carolina, ***Oregon***, South Dakota, ***Texas***, Vermont, ***Virginia***
Evidence of national certification (n=38)	***Alaska, Arkansas***, Arizona, ***California, Connecticut, Delaware,*** Florida, Idaho, Iowa, Kansas, Kentucky, ***Maine, Maryland, Massachusetts, Minnesota***, Mississippi, Missouri, ***Montana***, Nebraska, ***Nevada***, New Hampshire, New Jersey, New Mexico, New York, North Carolina, ***North Dakota, Oregon, South Carolina,*** South Dakota, ***Tennessee, Texas***, Utah, Vermont, ***Washington, West Virginia, Wisconsin, Virginia, Wyoming***
Description of NP experience (n=24)	***Alaska, Arkansas***, Arizona, ***Delaware***, Idaho, Kansas, Kentucky, ***Maryland, Minnesota,*** Mississippi, ***Montana***, Nebraska, ***Nevada***, New Mexico, New York, North Carolina, ***North Dakota, Oregon, South Carolina,*** South Dakota, ***Texas***, Utah, Vermont, ***Virginia***
Information about physician collaboration (n=31)	***Arkansas***, Arizona, ***California, Connecticut, District of Columbia,*** Florida, Idaho, Iowa, Kansas, Kentucky, ***Maine, Maryland, Massachusetts, Minnesota,*** Mississippi, Missouri, Nebraska, ***Nevada,*** New Jersey, New York, North Carolina, ***North Dakota, Rhode Island, South Carolina,*** South Dakota, ***Tennessee, Texas***, Utah, Vermont, ***Virginia, West Virginia***

[6] **State names printed in bold italics are those in which a separate application must be made for prescriptive authority (i.e., in addition to an application for legal recognition).**

Table 3. Restrictions to full prescriptive authority.

Restriction	States Imposing Restrictions
Practice protocol required (n=19)	***Arkansas*[7], *California, Connecticut, District of Columbia,*** Florida, Kansas, Kentucky, ***Massachusetts,*** Mississippi, Nebraska, ***Nevada,*** New Jersey, New York, North Carolina, ***South Carolina, Tennessee, Texas,*** Vermont, ***West Virginia***
Plan of accountability/ collaborative agreement (n=33)	***Arkansas,*** Arizona, ***California, Connecticut, Delaware, District of Columbia,*** Florida, Hawaii, Idaho, ***Indiana,*** Iowa, Kansas, Kentucky, ***Maine, Maryland, Massachusetts, Minnesota,*** Mississippi, Missouri, Nebraska, ***Nevada,*** New Jersey, New York, North Carolina, ***Rhode Island, South Carolina,*** South Dakota, ***Tennessee, Texas,*** Utah, Vermont, ***Virginia, West Virginia***
May prescribe based on a formulary (n=2)	New Hampshire, North Carolina
Physician backup required (n=13)	Arizona, Florida, Idaho, ***Maine, Maryland, Massachusetts, Minnesota,*** Nebraska, ***Nevada,*** New York, North Carolina, ***North Dakota, South Carolina***
Restrict drug prescriptions to area of practice expertise (n=11)	***Alaska,*** Arizona, ***Delaware,*** Florida, Iowa, Missouri, New Mexico, ***North Dakota, Oregon, Washington, Wyoming***

Categories of Controlled Substances That Can Be Prescribed.

Findings about the level of prescriptive authority relative to controlled substances revealed that thirteen boards grant prescriptive authority for legend[8] drugs only, fourteen grant authority for Schedule II-V, six grant authority for Schedule III-V, six grant authority for Schedule I-V, and two grant authority for Schedule V only (see Table 4).

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[7] **State names printed in bold italics are those in which a separate application must be made for prescriptive authority (i.e., in addition to an application for legal recognition).**

[8] **Legend drugs are those available by prescription only. Prior to 1998 they were required to have the following statement on their containers: "Caution: Federal law prohibits dispensing without prescription" (requirement was added by the Durham-Humphrey Amendment of 1952 to the Federal Food, Drug and Cosmetic Act of 1938). The required statement on prescription drug containers was changed to "Rx only" by the FDA Modernization Act of 1997.**

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Table 4. Schedules of controlled substances[9] that can be prescribed by family nurse practitioners.

Schedules of Controlled Substance	States Granting Prescriptive Authority
Legend Only (n=13)	California, Idaho, Kansas, Kentucky[10], Mississippi, Missouri, Nevada, New Jersey, Rhode Island, Tennessee, Texas, Hawaii, Virginia
Schedule V (n = 2)	South Carolina, Washington
Schedule III - V (n=6)	Maine, Nebraska, Oregon, Utah, Wyoming, West Virginia
Schedule II - V (n=14)	Alaska, Arizona, Connecticut, Delaware, Iowa, Maryland, Massachusetts, Montana, New Hampshire, New Mexico, New York, North Carolina, South Dakota, Wisconsin
Schedule I - V (n=6)	District of Columbia, Indiana, Minnesota, Nevada, North Dakota, Vermont

Examples of the substances in these Schedules are in Appendix G.

Facilitators.

For the purpose of this project, facilitators were defined as those aspects of the nurse practitioner application process that assist in expediting completion and could be standardized across states. This process is obviously facilitated if applications and regulations are concise, well formatted, well organized, and easy to follow. Application forms used by boards in Florida, Georgia, Oregon, North Dakota, South Carolina, and South Dakota are excellent examples of the above.

Challenges and Barriers.

For elements of this project, the words challenges and barriers are used interchangeably. They refer to those elements of the application process and the evaluation of FNPs seeking prescriptive authority that hinder completion of the application. They also include policies that result in increased time, energy, and confusion for all parties. Examples of the challenges and barriers found are: (1) lack of standardization among the states in the application process, the level of prescriptive authority granted, the requirements to gain prescriptive authority for controlled substances/schedule drugs, the scope of practice as reflected in states' administrative rules and regulations, titling of NPs, and the language of rules/regulations used to describe similar or identical concepts; and (2) multiple board authority/regulation of NP practice and prescriptive authority.

Conclusions

Analysis of the documents revealed no standardization among the states in the regulation of NP practice or in the granting of prescriptive authority for NP prescriptive privileges. However, the documents were valuable for identifying facilitators, challenges, barriers, and restrictions to prescriptive authority. These findings influenced the development of standardized regulatory criteria that boards of nursing can use to evaluate FNPs applying for prescriptive authority.

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[9] The Controlled Substances Act of 1970 became effective May 1, 1971. It collected and conformed most of the diverse laws into one piece of legislation. The law is designed to improve the administration and regulation of the manufacture, distribution, and dispensing of controlled substances by providing a "closed" system for legitimate handlers of these drugs. Such a closed system was expected to reduce the widespread diversion of these substances out of legitimate channels that find their way into the illicit market. The drugs and drug products that come under the jurisdiction of the Controlled Substances Act are divided into five schedules. Some examples in each schedule are outlined in Appendix G. For a complete listing of all the controlled substances contact any office of the Drug Enforcement Administration.

[10] Restricted to those included in protocol.

Development of Regulatory Evaluation Criteria

An initial draft of the regulatory criteria for use by boards of nursing in evaluating the academic and clinical preparation of FNPs requesting prescriptive privileges was prepared by National Council project staff; it was based on an analysis of information describing current regulatory practices, as described in the preceding section, the literature review, discussions with the Advisory Committee, and a review of the first and subsequent drafts of the Model Curriculum Guidelines. The criteria address the basic educational preparation and continuing education requirements of FNPs seeking initial and continuing prescriptive authority. Additional criteria define the requirements FNPs must meet when applying for these privileges concurrent with an application for legal recognition as an FNP in another state (i.e., licensure by endorsement).

Document Review and Revision Process.

The major goals of this project were to encourage states to adopt broader prescriptive authority, increase the ease of application for prescriptive authority within the states, increase ease of identifying pharmacology/pharmacotherapeutics content in the curriculum, and thereby increase access to quality primary health care. Therefore, it was crucial that a consensus document be developed. To accomplish this, the draft regulatory evaluation criteria were disseminated to a large number of interested groups for their input, evaluation and suggestions. These groups included all boards of nursing, pharmacy, and medicine, and various NP, pharmacy, and medicine stakeholder organizations. In addition, copies of the first draft were distributed at six national NP meetings between February 1996 and July 1996. At these national meetings, project staff presented detailed information about state board processes and procedures. Comments and input were solicited from those in attendance, and attendees were encouraged to circulate the document to colleagues not in attendance for review and comment. Approximately 70 comments and suggestions were received as a result of the dissemination of the first draft document.

Based on the feedback received, a second draft was prepared and redistributed to all boards of nursing and to all others who commented on the first draft. In addition, project staff presented detailed information about the proposed regulatory evaluation criteria at two national NP meetings during August and September 1996. Comments about the second draft were received from fifty-one groups/individuals.

The final document was prepared following consideration of reviewer comments, comparison with the evolving drafts of the curriculum guidelines, consultation with the Advisory Committee, input from the AHCPR and DN project officers, and a third review by the boards of nursing. The final document, *Recommended Regulatory Evaluation Criteria For Evaluating Family Nurse Practitioners Desiring Prescriptive Authority*, is attached as Appendix E[11]. A list of all organizations, groups and individuals providing feedback on the draft documents is provided in Appendix H.

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[11] **Additional copies of both documents may be obtained via the Internet on the National Council of State Boards of Nursing's Web page (www.ncsbn.org) or from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, via e-mail (orders@ntis.fedworld.gov) or FAX (703) 321-8547. Additional ordering information can be found on NTIS's Web site (http://www.ntis.gov). (Document number is HRSA 98-41.)**

IV. Summary

The primary purposes of this project, funded by the AHCPR and the HRSA's DN, were to develop model pharmacology/pharmacotherapeutics curriculum guidelines for FNP education and regulatory criteria for use in evaluating FNPs applying for prescriptive privileges. The impetus for the project was the lack of standardization of pharmacology/pharmacotherapeutics curricula that prepare FNPs for prescriptive privileges and in criteria used by state-level regulatory boards (primarily, boards of nursing) to determine eligibility for prescriptive authority. The development and adoption of uniform curriculum guidelines and regulatory criteria for granting prescriptive authority would promote the delivery of safe, effective pharmacotherapeutic treatment and would protect the public by establishing uniform standards to be met by all FNPs. Since FNPs have the broadest scope of practice of all APRNs, the curriculum guidelines can also be used to develop or, evaluate and revise, curricula in those NP specialty areas that have a more restrictive domain of practice. The regulatory evaluation criteria, as written, would be applicable to the evaluation of any type of NP.

The two documents that evolved as a result of this project are based on input and deliberations of representatives from nursing, medicine, and pharmacy professionals engaged in the education, practice, or regulation of FNPs. In addition, numerous resource documents were used. These included previously published materials (e.g., Hernandez, 1994; Wilson et al., 1995), examples of current curricular materials, documents obtained from boards of nursing (e.g., application forms for legal recognition as a nurse practitioner and the granting of prescriptive authority; regulatory language), and reports summarizing the regulatory environment as it pertains to the regulation of APRNs (National Council of State Boards of Nursing 1995b, 1997).

The Advisory Committee and the Expert Panel, both multi-disciplinary in composition, provided input to project staff at key points, and were actively involved in the development of the final documents. They were also instrumental in the consensus development process, which involved the solicitation of feedback from a wide range of individuals and representatives of key stakeholder groups. Widespread mailings of the draft documents, presentations at national meetings, and placement of the draft curriculum guidelines on an Internet Web page promoted both dissemination of information about the project and excellent feedback, which formed the basis for revisions of both documents.

The *Model Pharmacology and Pharmacotherapeutics Curriculum Guidelines* document provides a basis for FNP program curricular development, evaluation, and revision. The document accomplishes this in several ways. First, it outlines an advanced level, core course that is the equivalent of a forty-five contact hour, one semester course. Additionally, it indicates that pharmacology/pharmacotherapeutics content should be augmented by integrating it into the entire FNP curriculum, particularly in the clinical courses and the clinical preceptorships. Specific end-of-course and end-of-program competencies to be demonstrated are specified. The document also addresses pre-requisites and course sequencing, faculty preparation, and teaching methods. Therefore, the guidelines can be used as a reference, in addition to other available materials, as faculty design a specific advanced level, pharmacology/pharmacotherapeutics course and plan for the integration of course content in clinical courses and clinical learning experiences.

The *Regulatory Evaluation Criteria* for FNPs desiring prescriptive privileges are based on a review and analysis of resource documents describing the regulation of NPs and the *Model Pharmacology/Pharmacotherapeutics Curriculum Guidelines*. The criteria address the basic educational preparation requirements for both new FNPs and experienced FNPs who are submitting an initial application. The document also addresses continuing education requirements to be met for renewal of prescriptive

privileges and requirements when applying for these privileges concurrent with an application for legal recognition as an FNP in an additional state. While the criteria were developed to address FNP prescriptive authority, it is anticipated that they will be appropriate for the evaluation of all types of NPs.

Dissemination and implementation plans were developed to facilitate widespread knowledge of the documents and promote their use. It is anticipated that these efforts will promote standardization of the pharmacology/pharmacotherapeutics curriculum and the criteria an FNP must meet to obtain prescriptive privileges.

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Appendices

Appendix A

Project Staff

PROJECT STAFF

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Appendix B

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NATIONAL COUNCIL OF STATE BOARDS OF NURSING: PROJECT ADVISORY COMMITTEE MEMBERS

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Appendix C

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Appendix D

National Organization of Nurse Practitioner Faculties: Expert Panel Members - Development of Model Curriculum Guidelines

NATIONAL ORGANIZATION OF NURSE PRACTITIONER FACULTIES: EXPERT PANEL MEMBERS - DEVELOPMENT OF MODEL CURRICULUM GUIDELINES

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Ellis Youngkin, PhD, RN, OGNP; Professor and Graduate Program Coordinator, Florida Atlantic University, College of Nursing, Boca Raton, FL. Dr. Youngkin was one of two expert nurse consultants who helped prepare the Hernandez report on model curricula for APRNs with prescriptive privileges. She has organized NP courses in pharmacology and coordinated NP programs. Dr. Youngkin was formerly with Virginia Commonwealth University.

Appendix E

Model Pharmacology and Pharmacotherapeutics Curriculum Guidelines

MODEL PHARMACOLOGY AND PHARMACOTHERAPEUTICS CURRICULUM GUIDELINES

Introduction

The National Council of State Boards of Nursing (NCSBN) in collaboration with the National Organization of Nurse Practitioner Faculties (NONPF) has completed a 16-month project to (1) develop curriculum guidelines for pharmacology/pharmacotherapeutics courses appropriate for use in master's level family nurse practitioner (FNP) programs, and (2) to develop evaluation criteria for use by state boards of nursing in the assessment of the academic and clinical preparation of FNPs requesting prescriptive authority. This project was funded by the Agency for Health Care Policy and Research and the Division of Nursing, Bureau of Health Professions, Health Resources and Services Administration, Department of Health and Human Services.

The Model Pharmacology/Pharmacotherapeutics Curriculum Guidelines (Model Curriculum Guidelines) has been built upon the American Association of Colleges of Nursing's document (1995), *The Essentials of Master's Education for Advanced Practice Nursing*, which forms the foundation for guiding the curriculum for preparation of advanced practice nurses, and the National Organization of Nurse Practitioner Faculties' (1995) document, *Advanced Nursing Practice: Curriculum Guidelines & Program Standards for Nurse Practitioner Education*, which directs the formulation of a sound nurse practitioner (NP) curriculum. In addition, a review of pertinent literature was conducted, which included an examination of various pharmacology and pharmacotherapeutics curricula in current use and an in-depth evaluation of the findings in the document, *Analysis of Family Nurse Practitioner Pharmacology Curricula* (Hernandez, 1994). The Model Curriculum Guidelines moves one step beyond these documents to delineate further competencies in pharmacology/pharmacotherapeutics content for the FNP.

Development of the Model Curriculum Guidelines was the responsibility of NONPF project staff. To accomplish its charge, NONPF assembled an Expert Panel of eight members representative of nurse practitioner education and clinical practice, pharmacy, medicine, and ethical and legal perspectives. The Expert Panel reviewed all comments received in response to the drafts of the Model Curriculum Guidelines. Since these comments represented the viewpoints of many professionals from diverse geographic areas, every attempt was made to incorporate these suggestions in order to reflect the diversity of approaches to the pharmacologic preparation of FNPs.

Purposes and Intended Uses

It is intended that the Model Curriculum Guidelines be used to structure an advanced pharmacology/pharmacotherapeutics course and to guide the integration of its content into a FNP program. These Model Curriculum Guidelines also can be used to guide continuing education programs in pharmacology/pharmacotherapeutics for FNPs who have never prescribed in their clinical practice and are now applying for prescriptive privileges, for FNPs who are returning to clinical practice after a lengthy absence, and for FNPs who are applying for license renewal. It is expected that groups offering continuing education programs will evaluate the clinical application of course content and measure the advanced pharmacology/pharmacotherapeutics competencies of FNPs.

Assumptions Underlying the Model Curriculum Guidelines

The following assumptions are fundamental to the successful use of the Model Curriculum Guidelines:

1. The curriculum guidelines are designed for use in family nurse practitioner educational programs. Although the curriculum may serve as a framework for curriculum development in other specialty NP programs, the curriculum outlined is intended to be used to prepare FNPs in primary care for the broadest level of prescriptive authority.

2. The pharmacology/pharmacotherapeutics course, as outlined in this document, is a separate and distinct course, and one that is a foundational core course in the FNP program curriculum. It is intended to be the equivalent of a 45 contact hour, one semester course.

   This pharmacology/pharmacotherapeutics course for FNPs is intended as an advanced course based upon the previous knowledge of pharmacology and pharmacotherapeutics that the nurse obtained in under-graduate education and clinical practice.

3. Since a single course cannot cover all the pharmacology and pharmacotherapeutics that an FNP needs to know in order to be a safe and competent primary care provider, **additional** pharmacotherapeutics content **and its appropriate application** must be integrated into the entire FNP curriculum, particularly in the clinical courses and throughout the clinical preceptorships.

4. The content of the model pharmacology/pharmacotherapeutics course may **need to be supplemented** in response to regional perceptions, differences, and needs. However, it is assumed that virtually all the content outlined will be included in the FNP curriculum, either in the pharmacology/pharmacotherapeutics course or in other courses, and reinforced in clinical application.

   While the content in this pharmacology/pharmacotherapeutics curriculum has been conceptualized in a specific sequence and organized in a specified manner, it is understood that individual programs and faculty may choose to organize the course differently in order to best meet the needs of the client population that its graduates serve.

5. Health care in general is ever evolving. The field of pharmacotherapeutics, in particular, is constantly undergoing changes based on new discoveries and clinical research. Therefore, while this document provides a framework by which to organize the content for an advanced pharmacology/pharmacotherapeutics course, it is assumed that course content will need continuing updating as health care and the management of clients in primary care changes.

6. Most importantly, it is assumed that the pharmacology/pharmacotherapeutics curriculum in a FNP program builds upon a foundation in professional nursing. Therefore, this curriculum does not emphasize the health promotion and health education domain of nursing practice. However, it is assumed that ongoing client involvement in the plan of care, advocacy for the client, and client education and health promotion are inherent in the role of any nursing professional in providing health care. It is understood that the client is involved on an ongoing basis in the plan of care.

7. The Model Curriculum Guidelines document is intended to define the criteria against which a FNP's competence in pharmacology/pharmacotherapeutics is measured. Therefore, it is assumed that the educational program preparing FNPs will strive for the highest standards in order to assure quality and competent provision of health care to clients.

8. While faculty preparation is broadly defined, the assumption is that FNP programs will seek the best qualified faculty or faculty team (i.e., those with expertise in the theoretical and clinical aspects of pharmacology/pharmacotherapeutics) to teach pharmacology/pharmacotherapeutics, in order to assure the best possible preparation of family nurse practitioners for clinical practice.

Definitions

The following terms, used in this document, are defined as follows:

- **Pharmacology** — The study of the interaction of chemicals with living systems.
- **Pharmacokinetics** — The branch of pharmacology that focuses on the effects of absorption, distribution, metabolism, and excretion on the time course of drug concentration in an organism.
- **Pharmacodynamics** — The branch of pharmacology that focuses on drug-receptor interactions and other mechanisms by which drugs affect living systems.
- **Pharmacotherapeutics** — The use of medications in the prevention, diagnosis, and treatment of diseases and modification of physiology such as reproductive function.
- **Adverse Drug Reaction** — Any undesirable and unintended event associated with drug use.
- **Management** — Includes entire realm of assessment, diagnosis, treatment, and evaluation of the client's condition.
- **Course Competencies** — The knowledge that the student should be able to demonstrate upon successful completion of the pharmacology/pharmacotherapeutics course.
- **Program Competencies** — The cumulative knowledge, skills, and abilities the student should be able to demonstrate upon successful completion of the FNP program based upon the application of pharmacology/pharmacotherapeutics course content across the program of study and clinical experience.

Faculty Preparation

The faculty or faculty team that teaches an advanced pharmacology/pharmacotherapeutics course in an FNP program must have advanced knowledge and clinical experience in pharmacology/pharmacotherapeutics across the life span. This advanced knowledge and experience can be demonstrated by the following:

- meeting the criteria for a graduate faculty appointment in pharmacology and pharmacotherapeutics content;
- completion of a graduate level pharmacology/pharmacotherapeutics degree (PhD or PharmD);
- expertise in the clinical application of advanced pharmacology and pharmacotherapeutics content.

NP faculty provide curricular guidance in terms of the scope and focus of pharmacology and pharmacotherapeutics curricular content in primary care. The use of a team of faculty that includes NPs and pharmacologists is the soundest approach for curricular planning and implementation and to assure integration of pharmacology/pharmacotherapeutics content throughout the program. Furthermore, FNP faculty, pharmacists, and physicians, working as a team, can assist FNP students to meet expected program competencies.

Pharmacology/Pharmacotherapeutics Course: Prerequisites and Sequencing:

The American Association of Colleges of Nursing (1995), in *The Essentials of Master's Education for Advanced Practice Nursing*, recommends that advanced pharmacology and advanced physiology/pathophysiology be included in any advanced practice registered nursing program. Therefore, it is strongly recommended that a course in advanced physiology/pathophysiology **should be a pre- or co-requisite** to the advanced pharmacology/pharmacotherapeutics course.

Rationale: Pharmacologic mechanisms are based on physiologic and pathophysiologic processes. Advanced level pharmacology requires current understanding of physiologic concepts.

Teaching Methods

A combination of teaching methods that emphasize critical thinking is appropriate for the presentation of advanced pharmacology/pharmacotherapeutics content. No one method is viewed as superior to the others.

Rationale: Students learn in a variety of ways, thus a combination of techniques would accommodate varied learning styles and strengths of students.

Suggested teaching methods include:

- Traditional lecture
- Discussion
- Problem-based learning
- Case presentation in classroom
- Case presentations as written assignment
- Individual or group oral presentations
- Self-learning modules
- Interactive videos
- Audio and videotaped lectures
- Role-playing
- Simulation games
- Other games
- Computer simulations

END-OF-COURSE AND END-OF-PROGRAM COMPETENCIES

Goal:

The skilled family nurse practitioner in a primary care setting demonstrates competency in pharmacotherapeutics across the life span when s/he demonstrates the following:

#	END-OF-COURSE COMPETENCIES	END-OF-PROGRAM COMPETENCIES
1	Defines pharmacokinetic processes of absorption, distribution, metabolism, and excretion, and factors that alter pharmacokinetics.	Integrates knowledge of pharmacokinetic processes of absorption, distribution, metabolism, and excretion, and factors that alter pharmacokinetics into drug, dosage, and route selection.
2	Identifies the concept of and potential for a drug interaction.	Integrates knowledge of drug interactions in safe prescribing and monitoring practice.
3	Lists significant adverse drug reactions and appropriate interventions.	Detects actual and potential significant adverse drug reactions and intervenes appropriately.
4	Describes issues related to the bioavailability and bioequivalence of different drugs.	Incorporates bioavailability and bioequivalence principles into drug selection.
5	Identifies the indications, rationale, and mechanisms of action for pharmacotherapeutic agents.	Prescribes based upon appropriate indications for pharmacotherapeutic agents.
6	Contrasts drugs used to treat individuals with specific conditions based on factors such as pharmacokinetics, cost, genetic characteristics, etc.	Prescribes therapeutic agents to treat individuals with specific conditions based on factors such as pharmacokinetics, cost, genetic characteristics, etc.
7	Analyzes the relationship between pharmacodynamic mechanisms and physiologic responses.	Prescribes based upon appropriate indications for pharmacotherapeutic agents.
8	Describes essential client education regarding expected effects, potential adverse effects, proper administration, and costs of medications.	Educates client about expected effects, potential adverse effects, proper administration, and costs of medications.
9	Determines correct dosages, dosage form, routes, and frequency of administration of medications based on relevant individual client characteristics, e.g., age, culture, gender, and illness.	Selects/prescribes correct dosages, routes, and frequencies of medications based on relevant individual client characteristics, e.g., illness, age, culture, gender, and illness.
10	Identifies appropriate monitoring for specific drugs.	Monitors appropriate parameters for specific drugs.
11	Identifies proper techniques of prescription writing and transmission to minimize risk of errors.	Writes and transmits proper prescriptions that minimize risk of errors.

END-OF-COURSE AND END-OF-PROGRAM COMPETENCIES (continued)

#	END-OF-COURSE COMPETENCIES (Cont.)	END-OF-PROGRAM COMPETENCIES (Cont.)
12	Describes ethical and legal standards and ramifications of pharmacotherapeutics.	Adheres to ethical and legal standards of pharmacotherapeutics.
13	Describes factors that motivate clients in seeking medications and adhering to prescribed regimens.	Incorporates strategies to improve client adherence to prescribed regimens.
14	Contrasts roles of various health professionals in pharmacotherapeutics.	Consults appropriately when s/he recognizes limitations in knowledge of pharmacotherapeutics.
15	Identifies optimal sources of drug information.	Applies current drug information to pharmacotherapeutics.
16	Describes how to involve client in the decision-making process concerning therapeutic intervention, including self-treatment.	Involves client in decision-making process concerning therapeutic intervention, including self-treatment.

COURSE CONTENT OUTLINE

I. Basic Principles

A. PHARMACOKINETICS
1. Absorption
2. Distribution
3. Metabolism (biotransformation)
4. Excretion
5. Bioequivalence
   a. Absorption/distribution
   b. First pass effect
6. Volume of distribution
7. Clearance
8. Half-life
9. Steady state
10. Dosing considerations
    a. Loading dose
    b. Maintenance dose
    c. Routes of administration
    d. Dosage forms
    e. Patient variables/characteristics
11. Therapeutic drug monitoring

B. PHARMACODYNAMICS
1. Dose response relationships/ therapeutic index
2. Structure-activity relationships
3. Receptors
4. Agonists/antagonists
5. Signaling mechanisms

C. ADVERSE DRUG REACTIONS

D. DRUG INTERACTIONS
1. Drug/drug
2. Drug/food
3. Drug/disease

E. SPECIAL POPULATIONS
1. Pregnant mothers
2. Nursing mothers
3. Neonates/children
4. Elderly

F. SPECIAL CONSIDERATIONS
   1. Self treatments (e.g., Over-the-counter (OTCs))
   2. Alternative therapies
   3. Cost
   4. Cultural influences
   5. Gender
   6. Illness
   7. Poisoning
   8. Abuse
   9. Dependence
   10. Proper drug administration
   11. Genetic and racial effects

G. PROFESSIONAL ROLES

H. OTHER
   1. Sources of drug information
   2. Evaluation of drug production/ promotion
   3. Clinical investigational drug research
   4. Patient education, adherence, and participation
   5. Monitoring drug effects

II. Prescription-Writing

A. LEGAL CONSIDERATIONS
B. ETHICAL CONSIDERATIONS
C. MODES OF TRANSMITTING PRESCRIPTIONS
D. MINIMIZING ERRORS
E. CONTROLLED SUBSTANCES

III. Pharmacology and Pharmacotherapeutics of Drug Groups

(continued on pages 45-48)

III. Pharmacology and Pharmacotherapeutics of Drug Groups

PHARMACOLOGY	PHARMACOTHERAPEUTICS (examples)
A. Drugs Used to Manage Bacterial, Fungal, Parasitic, & Protozoal Infections:	**A. Prevention & Treatment of Bacterial, Fungal, Parasitic, & Protozoal Infections:**
Cell wall/cell membrane inhibitors Protein synthesis inhibitors Nucleic acid synthesis inhibitors Immunizations Other anti-infective agents	Bacterial infections Fungal infections Viral infections Parasitic infections Protozoal infections
B. Drugs Used to Manage Cardiovascular Conditions:	**B. Prevention & Treatment of Cardiovascular Conditions:**
Diuretics ACE/angiotensin converting inhibitors Centrally-acting antihypertensives Adrenergic inhibitors Beta blockers Alpha blockers Vasodilators Calcium channel blockers Nitrates & nitrites Cardiac glycosides (Digoxin) Antiarrhythmics Antilipidemics	Hypertension Angina Congestive heart failure Hyperlipedemia Peripheral vascular disease Prevention of stroke Prevention of myocardial infarction
C. Drugs Used to Manage Blood Conditions:	**C. Prevention & Treatment of Blood Conditions:**
Iron preparations Vitamin B_{12} Folic Acid Erythropoietin Anticoagulant agents Antiplatelet agents	Anemia Abnormal bleeding Thrombosis

III. Pharmacology and Pharmacotherapeutics of Drug Groups (Cont.)

PHARMACOLOGY (Cont.)	PHARMACOTHERAPEUTICS (examples) (Cont.)
D. Drugs Used to Manage Neuropsychiatric Conditions:	**D. Prevention & Treatment of Neuropsychiatric Conditions:**
Antiseizure agents Anti-parkinsonian agents Antipsychotic agents Mood stabilizers Anxiolytics Hypnotics Dementia drugs Psychostimulants Antidepressants Appetite suppressants Autonomic nervous system agents	Seizure disorders Parkinson's disease Tremors Drug-induced dyskinesia Schizophrenia Bipolar affective disorder Anxiety Depression Panic disorder Dementia Attention deficit hyperactivity disorder Attention deficit disorder Eating disorders Obsessive-compulsive disorder Sleep disorders Vertigo
E. Drugs Used to Manage Pain & Inflammatory Conditions:	**E. Prevention & Treatment of Pain & Inflammatory Conditions:**
Opioids Non-steroidal anti-inflammatory agents Other agents used to treat pain Antigout drugs Muscle relaxants Antimigraine drugs Local and topical anesthetics Non-narcotic analgesics	Gout Chronic pain Fever Acute pain Migraine Arthritis Headache Connective tissue disorders Minor musculoskeletal conditions
F. Drugs Used to Manage Respiratory Conditions:	**F. Prevention & Treatment of Respiratory Conditions:**
Bronchodilators Nonsteroidal antinflammatory agents Corticosteroids Mast cell inhibitors Antihistamines Decongestants Antitussives Antibacterial agents	Asthma Chronic obstructive pulmonary disease Allergic disorders Cough Cold Pneumonia

III. Pharmacology and Pharmacotherapeutics of Drug Groups (Cont.)

PHARMACOLOGY (Cont.)	PHARMACOTHERAPEUTICS (examples) (Cont.)
G. Drugs Used to Manage Gastrointestinal Conditions:	**G. Prevention & Treatment of Gastrointestinal Conditions:**
H2 blockers Proton pump inhibitors Antacids Cytoprotectants Antimicrobial agents Anticholinergic agents Laxatives Antidiarrheals Antiemetics Colorectal treatments Stool softeners Prokinetic agents Prostaglandin analog Antiflatulents Emetics	Ulcers Gastroesophageal reflux disorder Constipation Diarrhea Nausea Vomiting Irritable bowel syndrome Hemorrhoids Gastroenteritis Gastroparesis Poisoning
H. Drugs Used to Manage Endocrine Conditions:	**H. Prevention & Treatment of Endocrine Conditions:**
Antithyroid agents Thyroid agents Gonadal hormones Contraceptive agents Pancreatic hormones Diabetic agents Glucocorticoids Antiosteoporosis agents	Hyperthyroidism Hypothyroidism Contraception Menopause Abnormal uterine bleeding Premenstrual syndrome Endometriosis Diabetes Inflammatory disorders Osteoporosis
I. Drugs Used to Manage Genitourinary Conditions:	**I. Prevention & Treatment of Genitourinary Conditions:**
Bladder Inhibitors Bladder stimulants Prostatic agents Antibacterial agents	Benign prostatic hypertrophy Urinary incontinence Enuresis Urinary tract infection (UTI) Sexually transmitted diseases (STDs)

III. Pharmacology and Pharmacotherapeutics of Drug Groups (Cont.)

PHARMACOLOGY (Cont.)	PHARMACOTHERAPEUTICS (examples) (Cont.)
J. Drugs Used to Manage Dermatological Conditions:	**J. Prevention & Treatmen Dermatological Conditions:**
Antibacterial agents Antifungal agents Antiviral agents Ectoparasiticides Sunscreen agents Acne preparations Anti-inflammatory agents Antipruritics Prohirsutics Emollients Astringents	Acne Dermatitis Skin infestations Skin infections Burns Hair loss Dry skin
K. Drugs Used to Manage Electrolyte and Nutritional Conditions	**K. Prevention & Treatment of Electrolyte and Nutritional Conditions**
Vitamins Minerals Electrolytes Appetite stimulants	Poor nutrition Dehydration Electrolyte imbalance
L. Drugs Used to Manage Substance Abuse & Dependency:	**L. Prevention & Treatment of Substance Abuse & Dependency:**
Smoking cessation aids Alcohol and other drug deterrents	Substance abuse Nicotine dependence

Evaluation Criteria

Evaluation of individual achievement of pharmacology/pharmacotherapeutics course content should include: (1) clearly defined outcome criteria for successful completion of the pharmacology/pharmacotherapeutics course; and (2) specific measurement of pharmacology/pharmacotherapeutics knowledge. Accomplishment of competencies related to the knowledge, skills, and ability inherent in applying pharmacology and pharmacotherapeutics should be evaluated both clinically and theoretically throughout the program.

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Appendix F

Recommended Regulatory Criteria For Evaluating Family Nurse Practitioners Desiring Prescriptive Authority

RECOMMENDED REGULATORY CRITERIA FOR EVALUATING FAMILY NURSE PRACTITIONERS DESIRING PRESCRIPTIVE AUTHORITY

In addition to the stated criteria, it is assumed that the applicant requesting prescriptive authority meets all state requirements for recognition as a Family Nurse Practitioner.

I. Initial Application

The applicant must demonstrate that s/he meets either both criteria A and B, or criterion C. In all cases, the content must be consistent with the pharmacology/pharmacotherapeutics curriculum guidelines developed under contract HRSA 240-95-0026.[12]

A. Evidence of successful completion of an FNP program within the past two years including an advanced pharmacology/pharmacotherapeutics course of at least three semester hours (45 contact hours), ***and***

B. Evidence that the curriculum includes at least 500 hours of supervised clinical practice which includes prescribing and managing pharmaceutical agents.

OR

C. Evidence of at least 45 continuing education contact hours in pharmacology and pharmacotherapeutics within the past two years.

II. Renewal Application

A. Evidence of continued competence according to the regulations of the jurisdiction in which the renewal is sought, ***and***

B. Successful completion of at least 45 continuing education contact hours that include a minimum of 10 hours of pharmacology/pharmacotherapeutics within the past two years. The pharmacology/pharmacotherapeutics content may be a separate course or integrated within other offerings.

III. Endorsement Application (when moving from one state to another)

A. Evidence that the individual requesting endorsement has met the initial criteria for prescriptive authority in the jurisdiction from which they are moving, ***and***

B. Evidence that the individual requesting endorsement has maintained prescriptive authority in the jurisdiction from which they are moving, ***and***

C. Unencumbered license to practice in the jurisdiction from which they are moving.

Note: If an individual applying for legal recognition by endorsement (e.g., licensure, etc.) has never had prescriptive authority, the individual must meet both criteria I. A. and I. B., ***or*** criterion I. C.

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[12] **Yocom, C. J., Busby, L., Conway-Welch, C., and Viens, D. (1998). Curriculum Guidelines and Regulatory Criteria for Family Nurse Practitioners Seeking Prescriptive Authority to Manage Pharmacotherapeutics in Primary Care. Contract 240-95-0026. Rockville, MD: Department of Health and Human Services, Agency for Health Care Policy and Research and Health Resources and Services Administration, Division of Nursing. Publication Number HRSA 98-41.**

Appendix G

Examples of Substances in Schedules I to V

EXAMPLES OF SUBSTANCES IN SCHEDULES I TO V

Schedule I Substances

The substances in this schedule are those that have no accepted medical use in the United States and have a high abuse potential. Some examples are heroin, marijuana, LSD, MDMA "ecstasy", peyote, mescaline, psilocybine, N-ethylamphetamine, acetylmethadol, fenethylline, and methaqualone.

Schedule II Substances

The substances in this schedule have a high abuse potential with severe psychic or physical dependence liability. Schedule II controlled substances consist of certain narcotic, stimulant, depressant, and cannabinoid drugs. Some examples of Schedule II narcotic controlled substances are: opium, morphine, codeine, hydromorphone (Dilaudid), methadone, pantopon, meperidine (Demerol), cocaine, oxycodone (Percodan), and oxymorphone (Desoxyn), phenmetrazine (Preludin), methylphenidate (Ritalin), amobarbital, pentobarbital, secobarbital, fentanyl (Sublimaze), sufentanil, etophine hydrochloride, phonylactone, dronabinol and nabilone.

Schedule III Substances

The substances listed in this schedule have an abuse potential less than those in Schedules I and II, and include compounds containing limited quantities of certain narcotic drugs and non-narcotic drugs such as: codeine (Tylenol with Codeine), derivatives of barbituric acid except those listed in another schedule, nalorphine, benzphetamine, chlorphentermine, clortermine, phendimetrazine, paregoric and any compound, mixture, preparation or suppository dosage form containing amobarbital, secobarbital or pentobarbital.

Schedule IV Substances

The substances in this schedule have an abuse potential less than those listed in Schedule III and include such drugs as: barbital, phenobarbital, methylphenobarbital, chloral hydrate, ethchlorvynol (Placidyl), ethinamate (Valmid), meprobamate (Equanil, Miltown), paraldehyde, methohexital, fenfluramine, diethylpropion, phentermine, chlordiazepoxide (Librium), diazepam (Valium), oxazepam (Serax), clorazepate (Tranxene), flurazepam (Dalmane), clonazepam (Clonopin), prazepam (Verstran), alprazolam (Xanax), Halazepam (Paxipam), temazepam (Restoril), triazolam (Halcion), Lorazepam (Ativan), midazolam (Versed), Quazepam (Dormalin), mebutamate, dextropropoxyphene dosage forms (Darvon), and pentazocine (Talwin-NX).

Schedule V Substances

The substances in this schedule have an abuse potential less than those listed in Schedule IV and consist primarily of preparations containing limited quantities of certain narcotic and stimulant drugs generally for antitussive, antidiarrheal, and analgesic purposes. Some examples are bupremorphine and propylhexedrine; diphenoxylate and atropine (e.g., Lomotil); loperamide; and narcotic drugs in combination with other non-narcotic agents generally used as antitussives, where the amount of narcotic (e.g., codeine, dihydrocodeine) is limited.

References:

1. Malseed, R.T., Goldstein, F.J., Balkon, N. (1995) *Pharmacology, Drug Therapy and Nursing Considerations*, 4th Ed., J.B. Lippincott: Philadelphia, Pages 56-58.
2. U.S. Department of Justice, Drug Enforcement Administration, *Mid-Level Practitioner's Manual, an Informational Outline of the Controlled Substances Act of 1970*, First Ed., January, 1993, Pages 2-4.

Appendix H

Organizations, Groups, And Individuals Who Provided Comments On Draft Documents

ORGANIZATIONS, GROUPS, AND INDIVIDUALS WHO PROVIDED COMMENTS ON DRAFT DOCUMENT

Regulatory Boards/Governmental Agencies

Arkansas State Board of Nursing
California Board of Pharmacy
California Board of Registered Nursing
Colorado Board of Medical Examiners
Connecticut Board of Nursing
Delaware Board of Nursing
Delaware State Board of Pharmacy
Florida Board of Nursing
Hawaii Board of Medical Examiners
Hawaii Board of Nursing
Idaho State Board of Pharmacy
Indiana Board of Pharmacy
Iowa Board of Nursing
Louisiana State Board of Nursing
Maine State Board of Nursing
Maryland Board of Physician Quality Assurance
Massachusetts Board of Nursing
Michigan Board of Nursing
Mississippi Board of Nursing
Missouri State Board of Nursing
Nebraska Department of Health (Board of Nursing)
Nevada State Board of Nursing
New Hampshire Board of Nursing
New Mexico Board of Pharmacy
New York State Department of Education (Board of Nursing)
North Dakota Board of Nursing
Ohio Board of Nursing
Oklahoma Board of Nursing
Oregon State Board of Nursing
Pennsylvania State Board of Nursing
Rhode Island and Providence Plantations, Department of Health, Nurse Practitioner Advisory Committee
South Carolina Department of Labor, Licensing & Regulation
South Dakota Board of Nursing, Practitioner Advisory Committee
Texas Board of Medical Examiners
Texas Board of Nurse Examiners
Utah Department of Commerce (Board of Nursing)
Virginia Board of Nursing
Washington Medical Quality Assurance Committee (Board of Nursing)

OTHER ORGANIZATIONS/GROUPS

Allegheny University of the Health Sciences
American Academy of Pediatrics
American Association of Critical Care Nurses
American Association of Colleges of Nursing
American Association of Retired Persons
American College of Nurse Practitioners
American College of Clinical Pharmacology
American Pharmaceutical Association, Academy of Pharmacy Practice and Management
American Society of Health-System Pharmacists
Bowie State University
Citizen Advocacy Center
Delta State University
Edinboro University of Pennsylvania
Fisher College
Florida Nurses Association
George Mason University
Georgia Nurses' Association
Graceland College, Division of Nursing
Idaho Department of Veterans Affairs
Indiana State Nurses Association
Institute of Medicine, National Academy of Sciences
Iowa Nurses' Association
Kansas State Nurses' Association
L.A.B. Pharmacological Research International, Inc.
Louisiana State Nurses' Association
Montana Nurse Practitioners
National Association of Boards of Pharmacy
National Association of Clinical Nurse Specialists
National Governors' Association
National Organization of Nurse Practitioner Faculties
National Rural Health Association
New Jersey State Nurses' Association
New York State Nurses' Association
North Carolina Nurses' Association Council of Nurse Practitioners
Oregon Nurses' Association
Planned Parenthood of Montana
Sherman Family Practice Center, St. John Nurse Practitioners
Texas Nurses' Association, Advanced Practice Nursing Committee
Texas Tech University, Health Science Center
U.S. Navy Nurse Corps
University of Arizona
University of Iowa
University of Mary
University of Mississippi, School of Pharmacy
University of Missouri
University of New Mexico
University of Pennsylvania
University of Utah
Washington State Nurses' Association

Note: In addition, comments were received from 62 individuals.

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